

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 10/797,102
Attorney Docket No.: Q80311

REMARKS

Claims 1-19 are all the claims pending in the application. By this Amendment, Applicant adds claims 13-19. Claims 13-19 are clearly supported throughout the specification *e.g.*, Figs. 3 and 4 and ¶¶ 34 to 38 of the specification.

Preliminary Matters

Applicant thanks the Examiner for acknowledging Applicant's claim to foreign priority and for indicating receipt of the certified copy of the priority document filed on March 11, 2004.

Applicant thanks the Examiner for returning the initialed forms PTO/SB/08 submitted with the Information Disclosure Statements filed on March 11, 2004 and October 14, 2005.

The Examiner is respectfully requested to return the initialed form PTO/SB/08 submitted with the Information Disclosure Statement filed on November 23, 2005.

Application also respectfully requests that the Examiner indicate acceptance of the drawings filed March 11, 2004.

Claim Rejections under 35 U.S.C. § 103

Claims 1-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,196,304 to Koehly et al. (hereinafter "Koehly") in view of U.S. Patent No. 5,304,885 to Wong et al. (hereinafter "Wong"). Applicant respectfully traverses these grounds of rejection in view of the following comments.

Of these rejected claims, only claim 1 is independent. Independent claim 1, among a number of unique features, recites: "a plurality of magnets disposed on an inner circumferential surface of the cylindrical portion of the flywheel and rotating together with the flywheel; the

teeth opposed to the plurality of magnets;...each of the two end plates has a first portion that is laid on the first portion of each of the teeth and a second portion that is laid on the second portion of each of the teeth, at least the first portion of each of the two end plates is smaller in circumferential width than the first portion of each of the teeth, and at least the second portion of at least one of the two end plates is made of a non-magnetic metal material.” The Examiner alleges that claim 1 is related to a magneto-generator and is obvious in view of Koehly and Wong. Applicant respectfully disagrees.

In an exemplary, non-limiting embodiment of the present invention, two end plates of a stator core are made of a metal material to increase their rigidity and thereby hold, in a prescribed shape, generation coils that are wound on the teeth of the stator core. A number of permanent magnets are fixed to a rotor. To increase the insulation between the generation coils and the teeth, the circumferential width of a first portion, extending in the radial direction, of each of the end plates is made smaller than that of a corresponding first portion of a laminated core. A second portion of the two end plates is made of a non-magnetic metal material, whereby the magnetic loss is reduced and the temperature characteristic and the power generation characteristic are improved. It will be appreciated that the foregoing remarks relate to the invention in a general sense, the remarks are not necessarily limitative of any claims and are intended only to help the Examiner better understand the distinguishing aspects of the claims mentioned above.

The Examiner alleges that Koehly discloses a) a plurality of magnets, b) the teeth T opposed to the magnets (*see* page 2 of the Office Action). The Examiner acknowledges that

Koehly fails to disclose a second portion of the plates. The Examiner, however, alleges that Wong cures the deficient teachings of Koehly and that one of ordinary skill in the art would have been motivated to combine Koehly and Wong to reduce the build up of dust (*see* pages 2-3 of the Office Action).

Koehly, however, discloses a protective means for insulation. Specifically, Koehly discloses a laminated rotor assembly 10 with cast end ring means 11, which form part of a squirrel-cage winding. The rotor has a stator 12 and a number of sheet metal laminations L, each having radially located slots S adapted to fit windings W. Each sheet of laminations L has a plurality of teeth radially displaced a predetermined angular distance from each other and defining the slots S (col. 2, line 60 to col. 3, line 8). Koehly further discloses having solid metal ribs 34 in alignment with each of the teeth T and extending longitudinally thereof (Figs. 7; col. 4, lines 10 to 20). In Koehly, however, there is no disclosure or suggestion of magnets. Accordingly, in Koehly, the teeth T are not opposed to the magnets. Furthermore, in Koehly the ribs 34 (alleged plates) only extend longitudinally to the teeth T. That is, Koehly fails to disclose or suggest the ribs having a second portion that will protrude on the second portion of each of the teeth (the portion that projects in a circumferential direction from an outer end of the first portion of the teeth).

Wong fails to cure the deficient teachings of Koehly. Wong does not disclose permanent magnets and the teeth being opposed to the magnets. Similarly, Wong fails to disclose or suggest the second portion of the plates being made of non-magnet^{ic} metallic material.

Wong discloses T shaped laminations with their stems extending radially out from a central hub which fits on a motor shaft (col. 1, lines 10 to 20). Specifically, Wong discloses a laminated stack 3 having a number of T-shaped laminations and spiders 10A and 10B mounted at each respective end of the stack 3. The spiders 10A have spokes 20 and arms 24. One surface of the spokes 20 is mating planar surface 21 and the opposing surface 22 is an arcuate surface (see Abstract; Figs. 1 and 2; col. 2, lines 46 to 56). The spokes 20 are formed integrally with circumferentially extending arms 24. The lamination arms extend somewhat beyond the ends of the arms 24. The spiders 10A prevents the dust from collecting on the stack 3 (Fig. 2; col. 3, lines 3 to 36). The spiders 10 are made of electrically insulating material formed by plastic molding techniques (col. 4, lines 1 to 13 and 19 to 30).

Wong, however, only discloses forming the spiders 10 from the ~~electrically insulating material~~, which has to be non metallic since metal^s conducts¹ electricity. In other words, Wong fails to disclose or suggest having the spiders of non-magnetic metal material, thereby increasing rigidity and reducing the magnetic loss and improving power characteristics. In Wong, the spiders 10 are of electrically insulating material and not a non-magnetic metal material. In short, Wong does not cure the deficient teachings of Koehly.

Therefore, "a plurality of magnets disposed on an inner circumferential surface of the cylindrical portion of the flywheel and rotating together with the flywheel; the teeth opposed to the plurality of magnets;...each of the two end plates has a first portion that is laid on the first portion of each of the teeth and a second portion that is laid on the second portion of each of the teeth, at least the first portion of each of the two end plates is smaller in circumferential width

than the first portion of each of the teeth, and at least the second portion of at least one of the two end plates is made of a non-magnetic metal material,” is not obvious in view of Koehly and Wong, which lack having a plurality of magnets, the teeth opposing this plurality of magnets, and having the second portion of the end plate being made of non-magnetic metal material. For at least these exemplary reasons, claim 1 is patentable over the combined teachings of Koehly and Wong. Therefore, it is appropriate and necessary for the Examiner to withdraw this rejection of claim 1 and its dependent claims 2-12.

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In addition, the Office Action failed to address the features of claims 2-4, 8, 11, and 12.

Applicant respectfully requests the Examiner to indicate allowance of these claims or to address the features of these claims.

For example, claim 8 recites: “the second portion of each of the two end plates has a projection that projects parallel with the rotation axis.” The Office Action fails to address these unique features of claim 8. However, as acknowledged by the Examiner, Koehly does not disclose or suggest the second portion of the end plates. In Wong, the lamination arms extend somewhat beyond the ends of the arms 24 (Fig. 2; col. 3, lines 3 to 36). That is, in Wong, the arms 24 (alleged second portion of the end plates) do not have a projection portion as the lamination arms extend beyond the arms 24. For at least this additional reason, claim 8 is patentable over the combined teachings of Koehly and Wong.

Moreover, with respect to claims 5-7, 9, and 10, the Examiner simply alleges that they are a matter of obvious design choice (*see* page 3 of the Office Action). That is, the Examiner alleges that materials used and sizes are obvious design choices. Applicant respectfully

disagrees. For example, claim 11 recites: “the one end plate is made of stainless steel and the other end plate is made of aluminum.” Applicant respectfully submits that because of different materials used, one is made more rigid and the other one is more easily shaped as such manufacturing can be simplified without sacrificing rigidity (*e.g.*, ¶ 43 of the specification). Indeed, materials used and sizes of the plates are not matters of aesthetic design choice (MPEP § 2144.04) but are some of the important features of the claimed invention that relate to rigidity, manufacturability, and insulative effect, and as such should be accorded proper patentable weight. If the claimed elements are important features of the invention, it is inappropriate for the Examiner to rely solely on case law to support the rationale of obviousness, MPEP § 2144.04. For at least these additional exemplary reasons, claims 2-12 are patentable over Koehly in view of Wong.

New Claims

In order to provide more varied protection, Applicant adds claims 13-15, which are patentable at least by virtue of their dependency on claim 1.

New independent claim 16, among a number of unique features, recites: “each of the two end plates is made of a non-magnetic metal material and has a first portion that is laid on the first portion of each of the teeth and a second portion that is laid on the second portion of each of the teeth; and the second portion of each of the two end plates has a projection projecting in a direction along the rotating axis.”

For example, the projection E3 prevents the generation coil 30 from going outward and losing its shape. The projection E3 is also made of non-magnetic metal material and has high rigidity. By virtue of its characteristics, the projection E3 holds the outer end portion of the

generation coil 30 which wound on the tooth 22 so that the outer portion of the generation coil 30 assumes a prescribed shape inside the projection E3 (*see* page 10, line 24 to page 11, line 4 of the specification).

The combined teachings of Koehly and Wong fail to disclose or suggest at least the above-quoted unique feature of claim 16. Accordingly, for at least these exemplary reasons, claim 16 is patentable over the prior art of record.

New independent claim 17, among a number of unique features, recites: "each of two end plates is made of a non-magnetic metal material and has a first portion that is laid on the first portion of each teeth and a second portion that laid on the second portion of each teeth, and edges of each of the two end plates that are distant from the laminated core are chamfered."

As disclosed, the chamfered edges have round edges ER. These round edges ER increase the insulation from the generation coil 30. The round edges ER are easily formed by stamping, cutting, or the like, ~~for round an angle portion~~. Each of two end plates is made of a non-magnetic metal material and has high rigidity. The high rigidity of each end plates allows the end plates to hold, in a prescribed shape, the generation coil. It should be noted that if no round edges ER are provided, edges of each two end plates become sharp edges, and the generation coil wound on each tooth will contact the sharp edges of each end plates and its insulation will be decreased (*see* page 12, lines 15-20 of the specification).

The combined teachings of Koehly and Wong fail to disclose or suggest at least the above-quoted unique features of claim 17. Accordingly, for at least these exemplary reasons, claim 17 is patentable over the prior art of record.

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Claims 18 and 19 are patentable at least by virtue of their dependency on claims 16 and 17, respectively.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.


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